

**In the claims:**

**Amend claims 1-20 where indicated.**

1            1.        (Currently Amended)    A magnetic head assembly having ~~an air-bearing~~ a head  
2 surface ~~(ABS)~~ and comprising:  
3            a write head including:  
4                    ferromagnetic first and second pole pieces that have a yoke portion located between  
5 a pole tip portion and a back gap portion;  
6                    a nonmagnetic write gap layer located between the pole tip portions of the first and  
7 second pole pieces;  
8                    an insulation stack with at least one coil layer embedded therein located between  
9 the yoke portions of the first and second pole pieces:  
10                   the first and second pole pieces being connected at their back gap portions;  
11                   the pole tip portion of the first pole piece having non-overlapping first and second  
12 components wherein the first component forms a portion of the [[ABS]] head surface and  
13 the second component is recessed from the [[ABS]] head surface and is magnetically  
14 connected to the first component; and  
15                   the second component having a width that is less than a width of the first component  
16 wherein said widths are parallel to the [[ABS]] head surface and parallel to a major plane of the  
17 write gap layer~~[[.]]~~;  
18            a read head; and  
19            the first pole piece being located between the read head and the second pole piece.

1            2.        (Currently Amended)    A magnetic head assembly as claimed in claim 1 further  
2 comprising:  
3            the first pole piece having a third component that is recessed from the [[ABS]] head  
4 surface and that has a width that is parallel to the [[ABS]] head surface and the major plane of the  
5 write gap layer;  
6            the second component interconnecting the first and third components; and  
7            the width of the third component being greater than the width of the second component.

1           3.     (Previously Presented)   A magnetic head assembly having an air bearing surface  
2     (ABS) and comprising:

3           a write head including:

4                 ferromagnetic first and second pole piece layers that have a yoke portion located  
5                 between a pole tip portion and a back gap portion;

6                 a nonmagnetic write gap layer located between the pole tip portions of the first and  
7                 second pole piece layers;

8                 an insulation stack with at least one coil layer embedded therein located between  
9                 the yoke portions of the first and second pole piece layers;

10                the first and second pole piece layers being connected at their back gap portions;

11                the pole tip portion of the first pole piece layer having first and second components  
12                wherein the first component forms a portion of the ABS and the second component is  
13                recessed from the ABS and is magnetically connected to the first component;

14                the second component having a width that is less than a width of the first  
15                component wherein said widths are parallel to the ABS and parallel to a major plane of the  
16                write gap layer;

17                the first pole piece layer having a third component that is recessed from the ABS  
18                and having a width that is parallel to the ABS and the major thin film plane of the write  
19                gap layer;

20                the second component interconnecting the first and third components;

21                the width of the third component being greater than the width of the second  
22                component;

23                the first pole piece layer having a base layer and a pedestal wherein the pedestal  
24                forms a portion of the ABS; and

25                the pedestal interconnecting the base layer and the first component.

1           4.     (Currently Amended)   A magnetic head assembly as claimed in claim 1 further  
2     comprising:

3           [[a]] the read head including:

4                a read sensor;

5                nonmagnetic electrically nonconductive first and second read gap layers;

6 the read sensor being located between the first and second read gap layers;  
7 a ferromagnetic first shield layer; and  
8 the first and second read gap layers being located between the first shield layer and  
9 the first pole piece.

1 5. (Currently Amended) A magnetic head assembly as claimed in claim 4 further  
2 comprising:

3 the first pole piece having a third component that is recessed from the ABS and has a width  
4 that is parallel to the [[ABS]] head surface and [[the]] a major planes plane of the write gap  
5 layer;

6 the second component interconnecting the first and third components; and  
7 the width of the third component being greater than the width of the second component.

1 6. (Previously Presented) A magnetic head assembly having an air bearing surface  
2 (ABS) and comprising:

3 a write head including:

4 ferromagnetic first and second pole piece layers that have a yoke portion located  
5 between a pole tip portion and a back gap portion;

6 a nonmagnetic write gap layer located between the pole tip portions of the first and  
7 second pole piece layers;

8 an insulation stack with at least one coil layer embedded therein located between  
9 the yoke portions of the first and second pole piece layers;

10 the first and second pole piece layers being connected at their back gap portions;

11 the pole tip portion of the first pole piece layer having first and second components  
12 wherein the first component forms a portion of the ABS and the second component is  
13 recessed from the ABS and is magnetically connected to the first component;

14 the second component having a width that is less than a width of the first  
15 component wherein said widths are parallel to the ABS and parallel to a major plane of the  
16 write gap layer;

17 the first pole piece layer having a third component that is recessed from the ABS  
18 and having a width that is parallel to the ABS and the major thin film plane of the write  
19 gap layer;

20 the second component interconnecting the first and third components;  
21 the width of the third component being greater than the width of the second  
22 component;  
23 the first pole piece layer having a base layer and a pedestal wherein the pedestal  
24 forms a portion of the ABS; and  
25 the pedestal interconnecting the base layer and the first component.;  
26 a read head including:  
27 a read sensor;  
28 nonmagnetic electrically nonconductive first and second read gap layers;  
29 the read sensor being located between the first and second read gap layers;  
30 a ferromagnetic first shield layer; and  
31 the first and second read gap layers being located between the first shield layer and  
32 the first pole piece layer.

1 7. (Currently Amended) A magnetic disk drive including at least one magnetic  
2 head assembly that has ~~an air-bearing~~ a head surface [[ABS]] and that includes a write head and  
3 a read head, comprising:

4 the write head including:

5 ferromagnetic first and second pole pieces that have a yoke portion located between  
6 a pole tip portion and a back gap portion;

7 a nonmagnetic write gap layer located between the pole tip portions of the first and  
8 second pole pieces:

9 an insulation stack with at least one coil layer embedded therein located between  
10 the yoke portions of the first and second pole pieces:

11 the first and second pole pieces being connected at their back gap portions;

12 the pole tip portion of the first pole piece having non-overlapping first and second  
13 components wherein the first component forms a portion of the [[ABS]] head surface and  
14 the second component is recessed from the [[ABS]] head surface and is magnetically  
15 connected to the first component; and

16 the second component having a width that is less than a width of the first  
17 component wherein said widths are parallel to the [[ABS]] head surface and parallel to a  
18 major plane of the write gap layer;

19 the read head including:  
20 a read sensor;  
21 nonmagnetic electrically nonconductive first and second read gap layers;  
22 the read sensor being located between the first and second read gap layers;  
23 a ferromagnetic first shield layer; and  
24 the first and second read gap layers being located between the first shield layer and  
25 the first pole piece;  
26 the first pole piece being located between the read head and the second pole piece;  
27 a housing;  
28 a magnetic disk rotatably supported in the housing;  
29 a support mounted in the housing for supporting the magnetic head assembly with said  
30 [[ABS]] head surface facing the magnetic disk so that the magnetic head assembly is in a  
31 transducing relationship with the magnetic disk;  
32 a spindle motor for rotating the magnetic disk;  
33 an actuator positioning means connected to the support for moving the magnetic head  
34 assembly to multiple positions with respect to said magnetic disk; and  
35 a processor connected to the magnetic head assembly, to the spindle motor and to the  
36 actuator positioning means for exchanging signals with the magnetic head assembly, for  
37 controlling movement of the magnetic disk and for controlling the position of the magnetic head  
38 assembly.

1 8. (Currently Amended) A magnetic disk drive as claimed in claim 7 further  
2 comprising:  
3 the first pole piece layer having a third component that is recessed from the [[ABS]] head  
4 surface and has a width that is parallel to the [[ABS]] head surface and the major plane of the write  
5 gap layer;  
6 the second component interconnecting the first and third components; and  
7 the width of the third component being greater than the width of the second component.

1           9.       (Previously Presented) A magnetic disk drive including at least one magnetic  
2 head assembly that has an air bearing surface (ABS) and that includes a write head and a read  
3 head, comprising:

4           the write head including:

5                 ferromagnetic first and second pole piece layers that have a yoke portion located  
6                 between a pole tip portion and a back gap portion;

7                 a nonmagnetic write gap layer located between the pole tip portions of the first and  
8                 second pole piece layers;

9                 an insulation stack with at least one coil layer embedded therein located between  
10                the yoke portions of the first and second pole piece layers;

11                the first and second pole piece layers being connected at their back gap portions;

12                the pole tip portion of the first pole piece layer having first and second components  
13                wherein the first component forms a portion of the ABS and the second component is  
14                recessed from the ABS and is magnetically connected to the first component;

15                the second component having a width that is less than a width of the first  
16                component wherein said widths are parallel to the ABS and parallel to a major thin film  
17                plane of the write gap layer;

18           the read head including:

19                 a read sensor;

20                 nonmagnetic electrically nonconductive first and second read gap layers;

21                 the read sensor being located between the first and second read gap layers;

22                 a ferromagnetic first shield layer;

23                 the first and second read gap layers being located between the first shield layer and  
24                 the first pole piece layer;

25                 the first pole piece layer having a base layer and a pedestal wherein the pedestal  
26                 forms a portion of the ABS; and

27                 the pedestal interconnecting the base layer and the first component-;

28           a housing;

29           a magnetic disk rotatably supported in the housing;

30           a support mounted in the housing for supporting the magnetic head assembly with said  
31 ABS facing the magnetic disk so that the magnetic head assembly is in a transducing relationship  
32 with the magnetic disk;

33 a spindle motor for rotating the magnetic disk;  
34 an actuator positioning means connected to the support for moving the magnetic head  
35 assembly to multiple positions with respect to said magnetic disk; and  
36 a processor connected to the magnetic head assembly, to the spindle motor and to the  
37 actuator positioning means for exchanging signals with the magnetic head assembly, for  
38 controlling movement of the magnetic disk and for controlling the position of the magnetic head  
39 assembly.

1 10. (Original) A magnetic disk drive as claimed in claim 9 further comprising:  
2 the first pole piece layer having a third component that is recessed from the ABS and has  
3 a width that is parallel to the ABS and the major thin film planes of the layers of the sensor;  
4 the second component interconnecting the first and third components; and  
5 the width of the third component being greater than the width of the second component.

1 11. (Currently Amended) A method of making a magnetic head assembly having an  
2 ~~air-bearing a head surface (ABS) and~~ comprising the steps of:  
3 making a write head including the steps of:  
4 forming ferromagnetic first and second pole pieces that have a yoke portion located  
5 between a pole tip portion and a back gap portion;  
6 forming a nonmagnetic write gap layer between the pole tip portions of the first and  
7 second pole pieces:  
8 forming an insulation stack with at least one coil layer embedded therein between  
9 the yoke portions of the first and second pole pieces:  
10 connecting the first and second pole pieces at their back gap portions;  
11 forming the pole tip portion of the first pole piece with non-overlapping first and  
12 second components wherein the first component forms a portion of the [[ABS]] head  
13 surface and the second component is recessed from the [[ABS]] head surface and is  
14 magnetically connected to the first component; [[and]]  
15 forming the second component with a width that is less than a width of the first  
16 component wherein said widths are parallel to the [[ABS] head surface and parallel to a  
17 major plane of the write gap layer~~[[.]]; and~~  
18 forming a read head with the first pole piece located between the read head and the  
19 second pole piece.

1           12.       (Currently Amended)     A method of making a magnetic head assembly as  
2 claimed in claim 11 further comprising the steps of:

3               forming the first pole piece layer with a third component that is recessed from the [[ABS]]  
4 head surface and with a width that is parallel to the [[ABS]] head surface and the major plane of  
5 the write gap layer;

6               forming the second component interconnecting the first and third components; and

7               forming the width of the third component greater than the width of the second component.

1           13.       (Previously Presented)     A method of making a magnetic head assembly having  
2 an air bearing surface (ABS) and comprising the steps of:

3               making a write head including the steps of:

4               forming ferromagnetic first and second pole piece layers that have a yoke portion  
5 located between a pole tip portion and a back gap portion;

6               forming a nonmagnetic write gap layer between the pole tip portions of the first and  
7 second pole piece layers;

8               forming an insulation stack with at least one coil layer embedded therein between  
9 the yoke portions of the first and second pole piece layers;

10              connecting the first and second pole piece layers at their back gap portions;

11              forming the pole tip portion of the first pole piece layer with first and second  
12 components wherein the first component forms a portion of the ABS and the second  
13 component is recessed from the ABS and is magnetically connected to the first component;  
14 and

15              forming the second component with a width that is less than a width of the first  
16 component wherein said widths are parallel to the ABS and parallel to a major thin film  
17 plane of the write gap layer;

18              forming the first pole piece layer with a third component that is recessed from the  
19 ABS and with a width that is parallel to the ABS and the major thin film plane of the write  
20 gap layer;

21              forming the second component interconnecting the first and third components;

22              forming the width of the third component greater than the width of the second  
23 component;

24              forming the first pole piece layer with a base layer and a pedestal wherein the  
25 pedestal forms a portion of the ABS; and

26              forming the pedestal interconnecting the base layer and the first component.



1           14.     (Currently Amended)   A method of making a magnetic head assembly as claimed  
2 in claim 11 further comprising the steps of:

3           making [[a]] the read head including the steps of:

4                 forming a read sensor;

5                 forming nonmagnetic electrically nonconductive first and second read gap layers  
6 with the read sensor located between the first and second read gap layers; and

7                 forming a ferromagnetic first shield layer with the first and second read gap layers  
8 located between the first shield layer and the first pole piece.

1           15.     (Currently Amended)   A method of making a magnetic head assembly as  
2 claimed in claim 14 further comprising the steps of:

3           forming the first pole piece with a third component that is recessed from the [[ABS]] head  
4 surface and with a width that is parallel to the [[ABS]] head surface and the major plane of the  
5 write gap layer;

6                 forming the second component interconnecting the first and third components; and

7                 forming the width of the third component greater than the width of the second component.

1           16.     (Previously Presented)   A method of making a magnetic head assembly having  
2 an air bearing surface (ABS) and comprising the steps of:

3           making a write head including the steps of:

4                 forming ferromagnetic first and second pole piece layers that have a yoke portion  
5 located between a pole tip portion and a back gap portion;

6                 forming a nonmagnetic write gap layer between the pole tip portions of the first and  
7 second pole piece layers;

8                 forming an insulation stack with at least one coil layer embedded therein between  
9 the yoke portions of the first and second pole piece layers;

10                 connecting the first and second pole piece layers at their back gap portions;

11                 forming the pole tip portion of the first pole piece layer with first and second  
12 components wherein the first component forms a portion of the ABS and the second  
13 component is recessed from the ABS and is magnetically connected to the first component;  
14 and

forming the second component with a width that is less than a width of the first component wherein said widths are parallel to the ABS and parallel to a major thin film plane of the write gap layer;

forming the first pole piece layer with a third component that is recessed from the ABS and with a width that is parallel to the ABS and the major thin film plane of the write gap layer;

forming the second component interconnecting the first and third components;

forming the width of the third component greater than the width of the second component;

forming the first pole piece layer with a base layer and a pedestal wherein the pedestal forms a portion of the ABS; and

forming the pedestal interconnecting the base layer and the first component;

making a read head including the steps of:

forming a read sensor;

forming nonmagnetic electrically nonconductive first and second read gap layers with the read sensor located between the first and second read gap layers; and

forming a ferromagnetic first shield layer with the first and second read gap layers located between the first shield layer and the first pole piece layer.

17. (Currently Amended) A magnetic head assembly having a head surface and comprising:

a write head including:

ferromagnetic first and second pole pieces that have a yoke portion located between a pole tip portion and a back gap portion;

a nonmagnetic write gap layer located between said pole tip portions;

an insulation stack with at least one coil layer embedded therein located between said yoke portions;

the first and second pole pieces being connected at their back gap portions; and

the pole tip portion having a reduced cross-section portion wherein the reduced cross-section portion is located entirely within a region which is recessed from said head surface[.];

a read head; and

the first pole piece being located between the read head and the second pole piece.

1           18.   (Currently Amended)   A magnetic head assembly as claimed in claim 17 further  
2 comprising:

3           [[a]] the read head including:

4                   a read sensor;  
5                   nonmagnetic electrically nonconductive first and second read gap layers;  
6                   the read sensor being located between the first and second read gap layers;  
7                   a ferromagnetic first shield layer; and  
8                   the first and second read gap layers being located between the first shield layer and  
9 the first pole piece.

1           19.   (Currently Amended)   A magnetic disk drive including at least one magnetic  
2 head assembly that has a head surface and that includes a write head and a read head, comprising:

3           [[a]] the write head including:

4                   ferromagnetic first and second pole pieces that have a yoke portion located between  
5 a pole tip portion and a back gap portion;

6                   a nonmagnetic write gap layer located between said pole tip portions;

7                   an insulation stack with at least one coil layer embedded therein located between  
8 said yoke portions;

9                   the first and second pole pieces being connected at their back gap portions; and

10                  the pole tip portion having a reduced cross-section portion wherein the reduced  
11 cross-section portion is located entirely within a region which is recessed from said head  
12 surface;

13 the read head including:

14                   a read sensor;

15                   nonmagnetic electrically nonconductive first and second read gap layers;

16                   the read sensor being located between the first and second read gap layers;

17                   a ferromagnetic first shield layer; and

18                   the first and second read gap layers being located between the first shield layer and  
19 the first pole piece layer;

20 the first pole piece being located between the read head and the second pole piece;

21 a housing;

22 a magnetic medium supported in the housing;

23 a support mounted in the housing for supporting the magnetic head assembly with said  
24 head surface facing the magnetic medium so that the magnetic head assembly is in a transducing  
25 relationship with the magnetic medium; and

26 a processor connected to the magnetic head assembly for exchanging signals with the  
27 magnetic head assembly.

1 20. (Currently Amended) A method of making a magnetic head assembly having  
2 ~~an air-bearing~~ a head surface [[ (ABS) ]] and comprising the steps of:

3 making a write head including the steps of:

4 forming ferromagnetic first and second pole pieces with a yoke portion located  
5 between a pole tip portion and a back gap portion;

6 forming a nonmagnetic write gap layer between said pole tip portions;

7 forming an insulation stack with at least one coil layer embedded therein between  
8 said yoke portions;

9 connecting the first and second pole pieces at their back gap portions; and

10 forming the pole tip portion with a reduced cross-section portion wherein the  
11 reduced cross-section portion is located entirely within a region which is recessed from  
12 said head surface~~[[.]]~~; and

13 forming a read head with the first pole piece located between the read head and the  
14 second pole piece.

[Add new claims 21-24.]

1 21. (New) A magnetic head assembly that has a head surface comprising:  
2 a write head including:

3 ferromagnetic first and second pole piece layers that have a yoke portion located  
4 between a pole tip portion and a back gap portion;

5 a nonmagnetic write gap layer located between the pole tip portions of the first and  
6 second pole piece layers;

7 an insulation stack with at least one coil layer embedded therein located between  
8 the yoke portions of the first and second pole piece layers;

9 the first and second pole piece layers being connected at their back gap portions;

10 the pole tip portion of the first pole piece layer having first and second components  
11 wherein the first component forms a portion of the head surface and the second component  
12 is recessed from the head surface and is magnetically connected to the first component;

13 the second component having a width that is less than a width of the first  
14 component wherein said widths are parallel to the head surface and parallel to a major thin  
15 film plane of the write gap layer;

16 the first pole piece layer having a base layer and a pedestal wherein the pedestal  
17 forms a portion of the head surface and is located between the head surface and the  
18 insulation stack; and

19 the pedestal interconnecting the base layer and the first component.

1 22. (New) A magnetic head assembly as claimed in claim 21 further comprising:  
2 a read head; and

3 the first pole piece layer being located between the read head and the second pole piece  
4 layer.

1 23. (New) A method of making a magnetic head assembly that has a head surface  
2 comprising the steps of:

3 making a write head including the steps of:

4 forming ferromagnetic first and second pole piece layers that have a yoke portion  
5 located between a pole tip portion and a back gap portion;

6 forming a nonmagnetic write gap layer between the pole tip portions of the first and  
7 second pole piece layers;

8 forming an insulation stack with at least one coil layer embedded therein located  
9 between the yoke portions of the first and second pole piece layers;

10 connecting the first and second pole piece layers at their back gap portions;

11 forming the pole tip portion of the first pole piece layer with first and second  
12 components wherein the first component forms a portion of the head surface and the  
13 second component is recessed from the head surface and is magnetically connected to the  
14 first component;

15 forming the second component with a width that is less than a width of the first  
16 component wherein said widths are parallel to the head surface and parallel to a major thin  
17 film plane of the write gap layer;

18 forming the first pole piece layer with a base layer and a pedestal wherein the  
19 pedestal forms a portion of the head surface and is located between the head surface and  
20 the insulation stack; and

21 forming the pedestal to interconnect the base layer and the first component.

1 24. (New) A method as claimed in claim 23 further comprising the step of:

2 forming a read head with the first pole piece layer located between the read head and the  
3 second pole piece layer.

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